provide overwinter refuge for rodents to provide source prey populations during spring and summer.

- To the extent consistent with CALFED objectives, enhance at least 10% of agricultural lands to be enhanced under the ERP in the Delta, Sacramento River, and San Joaquin River Regions to increase forage abundance and availability within 10 miles of occupied habitat areas.
- To the extent consistent with CALFED objectives, manage lands purchased or acquired under conservation easements that are occupied by the species to maintain or increase their current population levels.
- To the extent practicable, manage restored or enhanced habitats under the ERP to maintain desirable rodent populations and minimize potential impacts associated with rodent control.

RATIONALE: *Historically, Swainson's hawk foraging habitat consisted of large expanses of open grasslands that supported abundant prey species. Swainson's hawks typically nest in riparian forests, small groves of trees, or lone trees within open habitats. Today, as a result of conversion of large expanses of historic grassland to urban, industrial, and agricultural uses, agricultural lands are major foraging habitat areas for Swainson's hawks. Some types of agriculture, however, are unsuitable because they do not support sufficient prey populations or because prey is unavailable as a result of dense vegetation (e.g., rice and vineyards). Over 85% of nesting territories in the Central Valley are associated with riparian systems adjacent to suitable foraging habitats (California Department of Fish and Game 1992). Consequently, improving prey abundance and availability on agricultural lands adjacent to restored riparian habitats will provide important elements of the specie's habitat necessary for the population to expand.*

SALT MARSH HARVEST MOUSE

MSCS SPECIES GOAL PRESCRIPTION: Maintain the current distribution and existing populations of salt marsh harvest mouse and establish and maintain viable species' populations throughout its historic range in the portion of the Bay Region within the ERP focus area.

MSCS CONSERVATION MEASURES: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- The geographic priorities for implementing actions to protect, enhance, and restore saline emergent wetlands and associated habitats for the salt marsh harvest mouse should be: 1) western Suisun Marsh, 2) Gallinas/Ignacio marshes, Napa Marshes, and eastern Suisun Marshes, 3) Sonoma Marshes, Petaluma Marshes, and Highway 37 marshes west of Sonoma Creek, 4) Point Pinole Marshes, 5) Highway 37 marshes west of Sonoma Creek, and 6) the Contra Costa County shoreline.
- Coordinate protection, enhancement, and restoration of saltmarsh and associated habitats with other federal, state, and regional programs (e.g., the San Francisco Bay Area Wetlands Ecosystem Goals Project, and USFWS species recovery plans) that could affect management of current and historic habitat use areas to avoid potential conflicts among management objectives and identify opportunities for achieving multiple management objectives.
- Restore wetland and perennial grassland habitats adjacent to occupied nesting habitats to create a buffer of natural habitat to protect nesting pairs from adverse affects that could be associated with future changes in land use on nearby lands and to provide suitable foraging habitat and nesting habitat area suitable for the natural expansion of populations.
- Initial species recovery efforts should be directed to locations where there are immediate opportunities for protection, enhancement, or restoration of suitable habitat.
- To the extent practicable, design dikes constructed in enhanced and restored saline emergent wetlands to provide optimal wetland to upland transition habitat.
- To the extent practicable, direct ERP salt marsh enhancement efforts towards existing degraded marshes that are of sufficient size and configuration to develop fourth order tidal

channels (marshes would likely need to be at least 1,000 acres in size).

- To the extent practicable, design salt marsh enhancements and restorations to provide low-angle upland slopes at the upper edge of marshes to provide for the establishment of suitable and sufficient wetland to upland transition habitat. Transition habitat zones should be at least 0.25 mile in width.
- Manage enhanced and restored habitat areas to avoid or minimize impacts on the salt marsh harvest mouse associated with recreational uses on lands acquired or managed under conservation easements.
- Direct restoration efforts towards restoration of lands adjacent to occupied habitat areas.
- Direct restoration efforts towards improving tidal circulation to diked wetlands that currently sustain partial tidal exchange.
- Direct some habitat enhancements and restorations towards increasing habitat connectivity among existing and restored tidal marshes.
- To the extent practicable, control non-native predator populations in occupied habitat areas and salt marshes enhanced and restored under the ERP.
- Control non-native invasive plants in existing salt marshes where non-native plants have degraded habitat quality and in salt marshes restored under the ERP.
- Monitor the use of restored salt marsh habitats by salt marsh harvest mice and the rate at which restored habitats are colonized.
- Acquire conservation easements to adjust grazing regimes to enhance wetland to upland transition habitat conditions.
- To the extent consistent with CALFED objectives, manage lands purchased or acquired under conservation easements that are occupied by the species to maintain or increase their current population levels.

RATIONALE: *The primary reason attributable to the decline in salt marsh harvest mouse populations is the extensive loss of its historical high tidal salt marsh and adjacent upland habitats to urban, industrial, and agricultural uses (U.S. Fish and Wildlife Service 1984a). Restoration of large expanses of suitable salt marsh habitat adjacent to uplands within the species historical and current range, therefore, will provide habitat area necessary for populations to expand.*

SAN PABLO CALIFORNIA VOLE

MSCS SPECIES GOAL PRESCRIPTION: Maintain the current distribution and existing populations of San Pablo California vole and establish and maintain viable species' populations throughout its historic range in portions of the Delta and Bay Regions within the ERP focus area.

MSCS CONSERVATION MEASURES: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- Coordinate protection, enhancement, and restoration of saltmarsh and associated habitats with other federal, state, and regional programs (e.g., the San Francisco Bay Area Wetlands Ecosystem Goals Project, and USFWS species recovery plans) that could affect management of current and historic habitat use areas to avoid potential conflicts among management objectives and identify opportunities for achieving multiple management objectives.
- Restore wetland and perennial grassland habitats adjacent to occupied habitats to create a buffer of natural habitat to protect populations from potential adverse affects that could be associated with future changes in land use on nearby lands and to provide habitat suitable for the natural expansion of populations.
- Manage enhanced and restored habitat areas to avoid or minimize impacts on the San Pablo California vole associated with recreational uses on lands acquired or managed under conservation easements.
- To the extent practicable, acquire, restore and manage historic tidal salt marshes and surrounding lands occupied by the San Pablo California vole along the west side of Point

Pinole to tidal marsh with sufficient wetland to upland transition and adjacent upland habitat to improve habitat conditions for the San Pablo California vole.

- To the extent practicable, control non-native predator populations in occupied habitat areas and salt marshes enhanced and restored under the ERP.
- Identify and implement feasible methods for controlling invasive non-native marsh plants.
- To the extent consistent with CALFED objectives, manage land purchases or acquired under conservation easement that are occupied by the species to maintain or increase their current population levels.

***RATIONALE**: The San Pablo vole is a California Department of Fish and Game Special Concern species. Although little is known about its distribution, biology, or taxonomy, it appears to be a distinct form that is confined to salt marshes and adjoining grasslands in Contra Costa County. To limit the decline of the populations even further, salt marsh and adjoining grassland habitats in Contra Cosa County need to be protected and further degradation and loss of habitat halted.*

SACRAMENTO PERCH

MSCS SPECIES GOAL PRESCRIPTION: Establish multiple self-sustaining populations of Sacramento perch within the Central Valley.

MSCS CONSERVATION MEASURES: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- Coordinate protection and restoration of Sacramento perch and its habitats with other federal and state programs (e.g., U.S. Fish and Wildlife Service species recovery plans) that could affect management of occupied and historic habitat areas to avoid potential conflicts among management objectives and identify opportunities for achieving multiple management objectives.
- Implement reintroductions into suitable habitat areas and manage habitat areas to maintain introduced populations.

***RATIONALE**: The Sacramento perch was once one of the most abundant fish in lowland habitats of the Central Valley. With the exception of a small population in Clear Lake, it has been extirpated from natural habitats within its native range due to competition and predation from introduced centrarchid fishes, such as black bass. It would certainly be formally listed as an endangered species except that it has been widely introduced into reservoirs, lakes, and ponds outside its native habitats in California and other western states.*

RIPARIAN BRUSH RABBIT

MSCS SPECIES GOAL PRESCRIPTION: Protect the Caswell Memorial State Park population; protect, enhance, and expand the species' Caswell Memorial Park population; and restore four additional self-sustaining populations in the Delta and along the San Joaquin River by 2020.

MSCS CONSERVATION MEASURES: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- Coordinate protection and restoration of riparian brush rabbit populations and its habitats with other federal and state programs (e.g., U.S. Fish and Wildlife Service species recovery plans) that could affect management of occupied and historic habitat areas to avoid potential conflicts among management objectives and identify opportunities for achieving multiple management objectives.
- Conduct surveys to identify suitable habitat areas for establishment of additional populations in the Delta and along the San Joaquin River and implement introductions to establish four additional populations in these areas aby 2020.
- Direct ERP actions proposed for the Stanislaus River towards protecting, enhancing, and restoring suitable riparian and associated flood refuge habitats in and adjacent to occupied habitat at Caswell Memorial State Park.

- Develop and implement a monitoring plan to assess populations status and trends.

RATIONALE: *Protection and restoration of existing occupied riparian brush rabbit habitat at Caswell Memorial State Park and actions to reduce the probability for mortality as a result of flooding, fire, and predation are major objectives of the species recovery plan (U.S. Fish and Wildlife Service 1997).*

SAN JOAQUIN VALLEY WOODRAT

MSCS SPECIES GOAL PRESCRIPTION: Protect the Caswell Memorial State Park Population; protect, enhance, and expand the species' Caswell Memorial Park population; and improve habitat connectivity and genetic interchange among isolated populations.

MSCS CONSERVATION MEASURES: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- Coordinate protection and restoration of San Joaquin Valley woodrat populations and its habitats with other federal and state programs (e.g., U.S. Fish and Wildlife Service species recovery plans and the Corps' Sacramento and San Joaquin Basin Comprehensive Study) that could affect management of occupied and historic habitat areas to avoid potential conflicts among management objectives and identify opportunities for achieving multiple management objectives.
- Direct ERP actions proposed for the Stanislaus River towards protecting, enhancing, and restoring suitable riparian and associated flood refuge habitats in and adjacent to occupied habitat at Caswell Memorial State Park.
- Direct ERP actions proposed for the San Joaquin River and its major tributaries within the current range of the species towards protecting and enhancing existing occupied habitat areas; restoring suitable habitat adjacent to occupied habitat areas; and restoring suitable riparian habitat to create habitat corridors linking isolated populations.

RATIONALE: *The primary reason attributable to the decline in numbers and distribution of the San Joaquin Valley woodrat populations is the extensive loss and fragmentation of its historical riparian habitats in the San Joaquin Valley urban and agricultural uses, and flood control and water supply projects to support those uses (U.S. Fish and Wildlife Service 1997). Protection, restoration, and enhancement of large expanses of suitable riparian habitat within the species historical and current range, therefore, will protect existing populations from future decline and provide habitat area necessary for existing populations to expand.*

GREATER SANDHILL CRANE

MSCS SPECIES GOAL PRESCRIPTION: Achieve recovery objectives identified in the Pacific Flyway Management Plan for the Central Valley population of greater sandhill cranes and Assembly Bill (AB) 1280 legislation that applicable to CALFED problem area, the Butte Sink, and other species' use areas consistent with CALFED's mission.

MSCS CONSERVATION MEASURES: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- To the extent consistent with CALFED objectives, implement ERP actions in concert with the species recovery strategies identified in AB 1280 and the Pacific Flyway Plan.
- Implementation of proposed ERP actions to enhance agricultural habitats should give priority to improving the abundance and availability of upland agricultural forage (e.g., corn and winter wheat) in the core use area centered around Bract Tract.
- Implementation of proposed ERP actions to restore wetlands should give priority to restoring and managing wetland habitat area within the core use area centered on Bract Tract that would provide suitable roosting habitat.
- Avoid or minimize recreational uses in the core area centered on Bract Tract that could disrupt crane habitat use patterns from October-March.
- To the extent consistent with CALFED objectives, at least 10% of agricultural lands to be enhanced under the ERP in the Delta and the Butte Sink should be managed to increase forage

abundance and availability for cranes. Priority should be given to implementing these habitat improvements within 10 miles of core habitat area centered on Bract Tract.

- Monitor to determine use of protected, restored, and enhanced habitats by sandhill cranes in core wintering areas.

RATIONALE: *Suitable shallow-water roosting habitat used by greater sandhill cranes during winter in the Delta is limited. Restoration and management of seasonal wetlands specifically to provide suitable roosting habitat free from disturbance near suitable foraging habitats will increase the area of available roosting habitat and may improve distribution of wintering cranes. Increases in food availability and abundance on agricultural lands will also be likely to improve distribution and winter survival of cranes in the Delta.*

California Yellow Warbler

MSCS Species Goal Prescription: Maintain and enhance suitable riparian corridor migration habitats and restore suitable breeding habitat within the historic breeding range of this species in the Central Valley.

MSCS Conservation Measures: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- Coordinate protection and restoration of riparian habitat areas with other federal and state programs (e.g., the Riparian Habitat Joint Venture, the SB 1086 Program, and the Corps' Sacramento and San Joaquin Basin Comprehensive Study) that could affect management of occupied and historic habitat areas to avoid potential conflicts among management objectives and identify opportunities for achieving multiple management objectives.
- To the extent consistent with CALFED objectives, protect existing suitable riparian habitat corridors from potential future changes in land use or other activities that could result in the loss or degradation of habitat
- A portion of restored riparian habitat area should be designed to include riparian scrub communities.
- To the extent practicable, restore riparian habitat in patch sizes sufficient to discourage nest parasitism by brown-headed cowbirds..

RATIONALE: *Neotropical migratory birds constitute a diverse group of largely passerine songbirds that overwinter in the tropics but breed in or migrate through the Central Valley and Bay-Delta region. As a group, they are in decline because of loss of habitat on their breeding grounds, in their migratory corridors, and in their wintering grounds. The species within this group are good indicators of habitat quality and diversity and their popularity with birders means that populations are tracked and have high public interest. They can also be good indicators of contaminant levels, by monitoring reproductive success and survival in areas near sources of contamination. Riparian forests are particularly important to this group because they are major migration corridors and breeding habitat for many species. By providing improved nesting and migratory habitat, it may be possible to partially compensate for increased mortality rates in the wintering grounds. Improved habitat for songbirds also provides habitat for many other species of animals and plants.*

Least Bell's Vireo

MSCS Species Goal Prescription: Achieve recovery objectives identified in the least Bell's vireo recovery plan applicable to the ERP focus study area.

MSCS Conservation Measures: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- Coordinate protection and restoration of riparian habitat areas with other federal and state programs (e.g., the least Bell's vireo recovery plan team, Riparian Habitat Joint Venture, and the Corps' Sacramento and San Joaquin Basin Comprehensive Study) that could affect management of occupied and historic habitat areas to avoid potential conflicts among management objectives and identify

opportunities for achieving multiple management objectives.

- To the extent consistent with CALFED objectives, protect existing riparian habitat areas from potential future changes in land use or other activities that could result in the loss or degradation of habitat areas that would be suitable for reintroductions or natural colonization of the species.
- A portion of restore riparian habitat area should be designated to include riparian scrub communities.
- To the extent practicable, restore riparian habitats in patch sizes sufficient to discourage nest parasitism by brown-headed cowbirds.

***RATIONALE**: A major reason attributable to the extirpation of the least Bell's vireo from its historical range in the Central Valley is the extensive loss and fragmentation of its historical riparian habitats to urban and agricultural uses, and flood control and water supply projects to support those uses (U.S. Fish and Wildlife Service 1998). Protection, restoration, and enhancement of large expanses of suitable riparian habitat within the species historical range is an objective of the least Bell's vireo recovery plan (U.S. Fish and Wildlife Service 1998) and will provide habitat area necessary for existing populations to expand.*

WESTERN YELLOW-BILLED CUCKOO

MSCS SPECIES GOAL PRESCRIPTION: Protect existing suitable riparian forest habitat areas within the species' historic range and increase the areas of suitable riparian forest habitat sufficiently to allow the natural expansion of the Sacramento Valley population.

MSCS CONSERVATION MEASURES: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- Coordinate protection and restoration of riparian habitat areas with other federal and state programs (e.g., the Riparian Habitat Joint Venture, the SB 1086 Program, and the Corps' Sacramento and San Joaquin Basin Comprehensive Study) that could affect management of occupied and historic habitat areas to avoid potential conflicts among management objectives and identify opportunities for achieving multiple management objectives.
- Initially direct ERP actions to restore suitable valley/foothill riparian forest and woodland along at least 10 contiguous miles of channels in the Delta to create a riparian forest corridor at least 200 meters in width.
- Restore large contiguous blocks of suitable valley/foothill riparian forest and woodland at least 200 meters in width and 500 acres in size along reaches of the Sacramento River adjacent to occupied habitat areas (Red Bluff to Chico).

***RATIONALE:** The primary reason attributable to the decline in numbers and distribution of the western yellow-billed cuckoo is the extensive loss or degradation of its historical riparian forest habitats in the Central Valley to urban and agricultural uses, and flood control and water supply projects to support those uses (California Department of Fish and Game 1992). Protection, restoration, and enhancement of large expanses of suitable riparian habitat within the species historical and current range, therefore, will protect existing populations from future decline and provide habitat area necessary for existing populations to expand.*

BANK SWALLOW

MSCS SPECIES GOAL PRESCRIPTION: Allow reaches of the Sacramento River and its tributaries that are unconfined by flood control structures (i.e., bank revetment and levees) to continue to meander freely, thereby creating suitable bank nesting substrates through the process of bank erosion.

MSCS CONSERVATION MEASURES: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- Coordinate protection and restoration of channel meander belts and existing bank swallow colonies with other federal and state programs (e.g., the SB 1086 Program and the Corps' Sacramento and San Joaquin Basin Comprehensive Study) that could affect

management of occupied and historic habitat areas to avoid potential conflicts among management objectives and identify opportunities for achieving multiple management objectives.

- Proposed ERP actions designed to protect or restore stream meander belts should initially be implemented along reaches of the Sacramento River and its tributaries that support nesting colonies or potential nesting habitat.
- Monitor to determine the response of bank swallows to restoration of stream meander belts and riparian habitat.
- Coordinate with BOR and DWR to_phase spring-summer reservoir releases in a manner that would reduce the potential for adverse effects on nesting colonies that could result from large, pulsed, releases.
- To the extent consistent with CALFED objectives, protect all known nesting colonies from potential future changes in land use or activities that could adversely affect colonies.

RATIONALE: *The decline in numbers and distribution of bank swallow populations is attributable to the loss of the natural depositional and erosional processes of rivers that create and sustain the types of channel bank nesting substrates required by the species largely as a result of flood control projects that have impeded the ability of rivers to erode their banks (California Department of Fish and Game 1992). Restoration of the ability of channels of major rivers in the Central Valley to erode their banks will increase the availability of suitable nesting habitat, providing the additional habitat area necessary for existing populations to expand.*

LITTLE WILLOW FLYCATCHER

MSCS SPECIES GOAL PRESCRIPTION: Maintain and enhance suitable riparian corridor migration habitats and restore suitable breeding habitat within the historic breeding range of this species in the Central Valley.

MSCS CONSERVATION MEASURES: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- Coordinate protection and restoration of riparian habitat areas with other federal and state programs (e.g., the Riparian Habitat Joint Venture, the SB 1086 Program, and the Corps' Sacramento and San Joaquin Basin Comprehensive Study) that could affect management of occupied and historic habitat areas to avoid potential conflicts among management objectives and identify opportunities for achieving multiple management objectives.
- To the extent consistent with CALFED objectives, protect existing suitable riparian habitat corridors from potential future changes in land use or other activities that could result in the loss or degradation of habitat
- A portion of restored riparian habitat area should be designed to include riparian scrub communities.
- To the extent practicable, restore riparian habitat in patch sizes sufficient to discourage nest parasitism by brown-headed cowbirds..

RATIONALE: *A major reason attributable to the extirpation of the little willow flycatcher as a breeding species from its historical range in the Central Valley is the extensive loss and fragmentation of its historical riparian habitats to urban and agricultural uses, and flood control and water supply projects to support those uses (Zeiner et al. 1990, California. Department of Fish and Game 1992). Consequently, the protection, restoration, and enhancement of large expanses of suitable riparian habitat within the species historical range will provide habitat area necessary for existing populations to expand.*

GIANT GARTER SNAKE

MSCS SPECIES GOAL PRESCRIPTION: Protect the existing population and habitat within the Delta Region and restore, enhance, and manage suitable habitat areas adjacent to known populations to encourage the natural expansion of the species.

MSCS CONSERVATION MEASURES: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- A substantial portion of tidal wetlands to be restored under the ERP should be restored in the North Delta (the Yolo Basin and Bypass)
- To the extent consistent with CALFED objectives, protect existing and restore additional habitat in the east Delta to create a corridor of suitable habitat linking Stone Lakes, the Cosumnes River, and White Slough.
- To the extent practicable, design setback levees in the restored Stone Lakes/Cosumnes River/White Slough habitat corridor to include a mosaic of habitats.
- Identify opportunities for implementing levee maintenance practices in the Delta that will maintain suitable levee habitat or minimize the impacts of necessary maintenance on the species and its habitat.
- Incorporate restoration of permanent or seasonal flooded (April-October) suitable habitat areas as part of a mosaic of the seasonal wetland and agricultural land enhancements to be implemented under the ERP.
- To the extent consistent with CALFED objectives, locate ERP nontidal marsh restorations near existing occupied habitat areas and design restorations to include suitable upland habitat areas at least 200 feet around restored wetlands.
- Include improvements to and maintenance of suitable agricultural infrastructure habitat (i.e., ditches, drains, canals, and levees) as part of ERP actions to improve wildlife habitat values associated with agricultural lands.
- To the extent consistent with CALFED objectives, manage lands purchased or acquired under conservation easements that are occupied by the species to maintain or increase their current population levels.
- Monitor suitable wetlands restored in the Delta Region adjacent to or near occupied habitats to assess if and when (relative to habitat maturity) giant garter snake occupy restored habitat or to identify reasons they are not using restored and apparently suitable habitat.

RATIONALE: *The giant garter snake is listed by both state and federal governments as a threatened species. Most of the original giant garter snake habitat, freshwater marshes, has been lost to agriculture. This snake resides in marsh habitat where there are pools and sloughs that exist year round to provide the frogs and invertebrates on which they feed. This snake survives today because small numbers live in rice fields and along irrigation ditches. Survival of the species, however, is likely to depend upon increasing its natural habitat through marsh restoration combined with special protection measures on the agricultural land it currently inhabits.*

DELTA GREEN GROUND BEETLE

MSCS SPECIES GOAL PRESCRIPTION: Protect all known occupied habitat areas from potential adverse affects associated with current and potential future land uses and establish three additional populations of the delta green ground beetle within its current and/or historic range.

MSCS CONSERVATION MEASURES: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- Coordinate protection, enhancement, and restoration of delta green ground beetle populations and its habitat with other federal and state programs (e.g., U.S. Fish and Wildlife Service species recovery plans and management of the Jepson Prairie Preserve) that could affect management of current and historic habitat areas to avoid potential conflicts among management objectives and identify opportunities for achieving multiple management objectives.
- Direct ERP actions towards protecting, enhancing, and restoring suitable vernal pool and associated grassland habitat within the species historic range, including expansion of Jepson Prairie Preserve westward to Travis Air Force Base.
- To the extent consistent with ERP objectives, direct ERP actions towards protection of the Davis Antenna Site population.

- Conduct surveys to identify suitable habitat areas, including enhanced and restored habitats, for establishment of additional populations in the Delta and Bay Regions and implement species introductions to establish three additional populations.
- To the extent consistent with CALFED objectives, manage lands purchased or acquired under conservation easements that are occupied by the species to maintain or increase current population levels and enhance occupied habitat areas.

RATIONALE: *The Delta green ground beetle is federally listed as a threatened species that is currently known only from Jepson Prairie Preserve (Solano County). Habitat requirements for this species are not clearly understood but the beetles seem to require open places near vernal pools. A better knowledge would help restoration efforts.*

SALTMARSH COMMON YELLOWTHROAT

MSCS SPECIES GOAL PRESCRIPTION: Maintain the current distribution and existing populations of the saltmarsh common yellowthroat and reestablish and maintain viable species' populations throughout its historic range in the portion of the Bay Region within the ERP focus area.

MSCS CONSERVATION MEASURES: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- The geographic priorities for implementing ERP actions to protect, enhance, and restore saline emergent wetlands and associated habitats for the saltmarsh common yellowthroat should be: 1) Gallinas/Ignacio marshes and Napa Marshes, 2) Sonoma Marshes, Petaluma Marshes, and Highway 37 marshes west of Sonoma Creek, 3) Point Pinole Marshes, 4) Highway 37 marshes east of Sonoma Creek, and 5) the Contra Costa County Shoreline.
- Coordinate protection, enhancement, and restoration of saltmarsh and associated habitats with other federal, state, and regional programs (e.g., the San Francisco Bay Area Wetlands Ecosystem Goals Project, and USFWS species recovery plans) that could affect management of current and historic habitat use areas to avoid potential conflicts among management objectives and identify opportunities for achieving multiple management objectives.
- Restore wetland and perennial grassland habitats adjacent to occupied nesting habitats to create a buffer of natural habitat to protect nesting pairs from potential adverse affects that could be associated with future changes in land use on nearby lands and to provide suitable foraging habitat and nesting habitat area suitable for the natural expansion of populations.
- Initial species recovery efforts should be directed to locations where there are immediate opportunities for protection, enhancement, or restoration of suitable habitat.
- To the extent practicable, design dikes constructed in enhanced and restored saline emergent wetlands to provide optimal wetland to upland transitional habitat.
- To the extent practicable, direct ERP salt marsh enhancement efforts towards existing degraded marshes that are of sufficient size and configuration to develop fourth order tidal channels (marshes would likely need to be at least 1,000 acres in size).
- To the extent practicable, design salt marsh enhancements and restorations to provide low-angle upland slopes at the upper edge of marshes to provide for the establishment of suitable and sufficient wetland to upland transition habitat. Transition habitat zones should be at least 0.25 mile in width.
- Manage enhanced and restored habitat areas to avoid or minimize impacts on the saltmarsh common yellowthroat associated with recreational uses on lands acquired or managed under conservation easements.
- Direct some habitat enhancements and restorations towards increasing habitat connectivity among existing and restored tidal marshes.
- To the extent practicable, control non-native predator populations in occupied habitat areas

and salt marshes enhanced and restored under the ERP.

- Identify and implement feasible methods for controlling invasive non-native marsh plants.
- Monitor to determine use of restored salt marsh habitats by saltmarsh common yellowthroat and the rate at which restored habitats are colonized.

RATIONALE: *Saltmarsh common yellowthroat occupies habitat year round in the Suisun Marsh/North San Francisco Bay Ecological Management Zone. Contributions to the recovery of this species will include the consideration and integration of this species's needs into the design and implementation of habitat restoration projects in the region.*

BRISTLY SEDGE

MSCS SPECIES GOAL PRESCRIPTION: Research habitat requirements and use knowledge gained to develop and implement specific recovery measures.

MSCS CONSERVATION MEASURE: The following conservation measure is included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- Identify and implement opportunities to restore suitable wetland habitat within ERP nontidal freshwater marsh restoration actions.

RATIONALE: *Bristly sedge is dependent on non-tidal perennial aquatic habitats such as lakes and ponds. This species will benefit from the restoration of habitats in the Suisun Marsh/North San Francisco Bay Ecological Management Zone.*

POINT REYES BIRD'S-BEAK

MSCS SPECIES GOAL PRESCRIPTION: Maintain, enhance and restore suitable high marsh and high marsh-upland transition habitat around San Pablo Bay.

MSCS CONSERVATION MEASURES: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- Identify and implement restoration of suitable habitat in high marsh and marsh/upland transition areas. Incorporate high marsh and margin suitable habitat in ERP salt marsh restoration programs.
- Maintain and restore Point Reyes bird's-beak around San Pablo Bay in conjunction with restoration of saline emergent wetlands.
- Prepare and implement a management plan to control and reduce non-native weeds near existing and new populations.

RATIONALE: *Point Reyes bird's-beak occurs or has the potential to occur in the Suisun Marsh/North San Francisco Bay Ecological Management Zone. Program to restore saltmarshes in this Zone will contribute to the recovery of this species.*

CRAMPTON'S TUCTORIA

MSCS SPECIES GOAL PRESCRIPTION: Review and update recovery plan targets, protect all extant occurrences, and manage habitat to benefit Crampton's tuctoria (e.g., manage grazing).

MSCS CONSERVATION MEASURES: The following conservation measures are included in the Multi-Species Conservation Strategy (2000) to provide additional detail to ERP actions that would help achieve species habitat or population targets.

- Establish three new self-sustaining populations in conjunction with establishment of Delta green ground beetle populations.
- Maintain existing populations.

RATIONALE: *Crampton's tuctoria occurs only in Solano and Yolo counties and is dependent on the clay bottoms of drying vernal pools and lakes. Actions to contribute to the recovery of this species will also benefit the Delta green ground beetle.*

DELTA MUDWORT AND DELTA TULE PEA

MSCS SPECIES GOAL PRESCRIPTION: Protect at least 90% of occupied habitat including 90% of high quality habitat throughout the range of the species to protect geographic diversity, and expand suitable and occupied habitat by 100 linear miles.